

intima. Is it not possible that tracheal pressure may distend these cells like bladders, and thus facilitate the aeration of the tissues? The conditions for their distention seem to be present at every pulsation, though under dissection they are always collapsed. I have found such terminal enlargements of the tracheae numerous developed in the disti-proboscis of the house-fly. On one occasion I got a fly in a live-cage with the tip of its pro-

boscis pressing the cover-glass; and by focussing the microscope on this, I found that with every pulsation there was a circle of flashing lights along the margin of the proboscis, as if air was rhythmically injected into such sacs. It is easy to understand how such distension would promote the function of the tracheae as carriers of gases between the tissues and the outer world.

Princeton, 24 Nov. 1882.

CLUSTER-FLIES.

BY BENJAMIN PICKMAN MANN, WASHINGTON, D. C.

At a meeting of the Biological society of Washington, held 13 Oct. 1882, Mr. W: H. Dall exhibited specimens of flies which had been sent him from New York state with an account of their habit of congregating in large numbers in unused apartments of houses, under table-cloths, in pillow-cases, and wherever similar snug places of concealment could be found. These flies were found from late fall until late spring in such situations, but during the summer they disappeared. Specimens were put into the hands of Dr. C: V. Riley, who made a communication upon them at the meeting of the same society, 10 Nov. 1882, dwelling upon the difficulty of identifying the species of the fly and stating that it was the *Pollenia rudis*, described by T. W: Harris as *Musca familiaris*, and making further remarks upon the synonymy. At this meeting Mr. Dall read a letter, received since the presentation of his first communication, from the parties who had sent the specimens, giving a highly colored account of the actions of the flies. Dr. Frank Baker made a more rational statement in regard to the occurrence of flies in Maine,

which were probably of the same species, and had similar habits. Dr. Baker stated that as many of the people in Maine still kept up the custom of the home-production of yarns and spun goods, and these goods, of loose texture, retained upon them a considerable quantity of their natural grease, the flies were in the habit of burrowing into such goods, to feed on the grease, and were supposed to eat the fibres. Dr. Riley did not seem to credit the flies with this habit, but there seems to be no reason to doubt the possibility of such injury, and not much improbability about it. The flies were stated to attach themselves sometimes in clusters suspended from ceilings and other supports, and were on this account called "cluster-flies." Mr. Dall's informant stated that the flies were proof, at least to a great extent, against the influence of pyrethrum powder, but Dr. Baker said that if the powder was diffused in an apartment, and the flies were then caused to bestir themselves, and to fly about, they succumbed to the influence of the powder as readily as other flies. Such a difference in observations is not surprising, for it may

be observed in other insects that when they are sluggish or at rest they are not so readily affected by medicinal agencies as when in a state of motion or excitement.

I remember that, during one or two years, at a certain season, which, as far as my recollection serves me, was in April, I noticed numerous specimens of *Microdon globosus*, a syrphid fly, issue from a nail-hole in the plastered wall of an apartment in a dwelling-house, as

though the flies had passed the winter within the walls of the house. Numerous instances, which will occur to experienced entomologists, might be cited of the congregation of winged insects in sheltered situations for the purpose of hibernation, this habit being only a modification of the general habit in hibernating insects to seek a place for individual shelter.

Washington, 11 Nov. 1882.

PROMOTING LOCUST RAVAGES.

BY BENJAMIN PICKMAN MANN, WASHINGTON, D. C.

It is well established that the year 1874 was characterized in the state of Kansas by the most extensive ravages of the so-called Rocky Mountain locust, *Caloptenus spretus*, which insects flew into the state from the west and the north, and stripped large areas bare of vegetation. The devastation in that year occurred principally in the western and central portions of the state, but, as Dr. C. V. Riley says in his 8th report as state entomologist of Missouri, "the greatest bulk of the eggs were [was] laid as the locusts approached the eastern limits of the state." In 1875 "the damage done was by the young locusts, which hatched in enormous numbers in the eastern part of the state."

The purpose of this note is that I may publish a communication sent to me by Mr. J. P. Brown, formerly, for twelve years, a resident of eastern Kansas, from which state he removed, discouraged by the ravages of the locusts, in the fall of 1875. This communication explains sufficiently at least one of the causes of the enormous prevalence of young locusts in that state, in 1875. A similar showing

has already been made for the state of Nebraska by Prof. S. Aughey in the 1st report of the U. S. entomological commission. Mr. Brown says:—

"After a twelve year's residence in eastern Kansas, I left that excellent state in the fall of 1875.

"After raising a fine crop of corn and seeing it destroyed by the locusts before it was ripe, or advanced sufficiently for gathering, I was, in common with many thousands and others, much discouraged.

"Settlers who had lost all their crops, with very little to subsist upon, found it necessary to hunt prairie chickens, and to sell them for the necessaries of life, and many, for sport as well, made a business during the entire winter of killing and shipping not only prairie chickens, but also quails and other birds.

"I took pains to gather from commission merchants of Leavenworth, Kans., and of Kansas City and St. Joseph, Mo., and from the express companies, such data as I could at the time, and estimated that during the winter of 1874 the enormous quantity of 1000 car-loads of birds were